

United States District Court
Southern District of Texas
FILED

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APR 24 2001

Michael N. Milby
Clerk of Court

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
BROWNSVILLE DIVISION

RAQUEL O. RODRIGUEZ
AND JOSE L. RODRIGUEZ

VS.

RIDDELL SPORTS, INC.
RIDDELL, INC.
ALL AMERICAN SPORTS CORPORATION
D/B/A RIDDELL/ALL AMERICAN
AND CHRIS HOODMAN

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CIVIL ACTION NO. B-CV-96-177

RIDDELL, INC. AND ALL AMERICAN SPORTS CORPORATION MOTION TO
DESIGNATE REBUTTAL WITNESSES, TO REOPEN DISCOVERY
AND FOR CONTINUANCE

TO THE HONORABLE JUDGE OF SAID COURT:

Defendant's, Riddell, Inc. and All American Sports Corporation, asks the court to allow them to designate rebuttal witnesses, reopen discovery in this case and continue the case for at least 120 days to allow time for additional discovery and trial preparation.

1. Defendants' are Riddell, Inc. and All American Sports Corporation who, for brevity will hereinafter be referred to as Riddell or Defendants even though they are two separate distinct entities. Likewise, Plaintiff's are Raquel Rodriguez and Jose Rodriguez who will for brevity be hereinafter be referred to as Plaintiffs or Rodriguez.

2. Plaintiffs sued Defendants for personal injury and punitive damages on a strict liability defective design theory under 402a Restatement of Torts and under common law gross Negligence. All other causes of action have been abandoned. This lawsuit was previously tried to a jury verdict between the dates of March 8, 1999 and March 16, 1999. The case was appealed to the Fifth Circuit and was reversed and remanded by opinion rendered on February 14, 2001. The mandate returning the lawsuit to the district court was

issued on March 15, 2001. This fifteen days notice was insufficient and unreasonable notice. Because of such short notice some of Defendants witnesses cannot be present for trial. The witnesses are Dr. Ommaya, Dr. Gennarelli and Dave Halstead. Defendants should have the opportunity and right to have these witnesses live at the time of trial for the purposes of rebutting whatever testimony is presented by the Plaintiffs and not be limited to deposition or prior trial testimony. To do so would put the Plaintiffs at a distinct advantage over the Defendants and the Defendants at a distinct disadvantage.

3. With fifteen days notice, on April 11, 2001, this court set this case for a final pre-trial on April 26, 2001 and jury selection on April 27, 2001.

4. This motion to reopen discovery, for a new scheduling order and for continuance is being presented at the earliest practical time. Defendants will herein set forth in detail the specifics of why this motion should be granted, the specific evidence or testimony needed and why the evidence or testimony is relevant and important. Defendants represent that such discovery can be had and can be obtained in a reasonable time and that reasonable time will be one-hundred twenty (120) days.

5. This lawsuit is complex. It is complex because Plaintiff had a condition known as a subdural hematoma. Subdural hematomas may occur spontaneously. Subdural hematomas may be brought about by congenital defects. Subdural hematomas may be the result of various types of trauma. The forces involved in the trauma may be rotational or translational or a combination of both. The mechanisms of injury for subdural hematomas are the subject of much discussion in the scientific community. Further this case is complex because there have been in excess of 33 witnesses deposed. The deposition and prior trial testimony of these witnesses consists of 4,107 pages. Plaintiffs'

and defendants exhibits number in excess of 5,000 pages. There are more than fifteen boxes of Plaintiffs and Defendants exhibits that were admitted at the first trial of this lawsuit.

6. On March 27, 2001, Robert Summers Defendants lead counsel underwent surgery on his right shoulder to repair a torn rotator cuff, to remove “spurs” and to shorten a bone. This surgery while successful has necessitated expenditure of three plus hours per day in rehabilitation exercises. Presently the time needed for the rehabilitation exercises is 1.5 hours three times a day for 4.5 hours.

7. A chronology of this case clearly demonstrates why additional discovery is needed, not because of the lack of due diligence on these parties part, but because of the actions of plaintiffs, the court and factors beyond this parties control. It would be a manifest injustice not to reopen discovery in this case and the more salient reasons therefore are as follows:

- a. Discovery was closed on June 2, 1998.
- b. Until 53 days before the first trial plaintiff's liability witnesses consisted of a biomechanical engineer Dr. Richard Stalnaker and neurologist Dr. Richard Rubenstein.
 - 1) Dr. Stalnaker's position with regard to the energy absorbing foam in the VSR-4 helmet was that it needed more foam but he would not say how much or how soft or how hard it should be and that he was never going to.
 - 2) Dr. Rubenstein's opinion was that there was nothing on the x-rays or CT scans that he would point to as being evidence of a direct or

translational force to Plaintiff's head as being the cause of the subdural hematoma.

- 3) Because discovery had long since been closed, Plaintiffs under a guise of having obtained rebuttal testimony from Dr. Stalnaker, Dr. Gary Stimac, Dr. John White and Dr. Richard Rubenstein advised defendants on January 14, 1999 by letter of Plaintiffs contention that Dr. Gary Stimac and Dr. John White would be testifying to the existence of subgalea hematoma on Jose Rodriguez's scalp. Whether there is a subgalea hematoma is crucial to Plaintiffs' assertion in their primary case and claims that the subdural hematoma was caused by direct translational forces. It has nothing to do with rebuttal.
- c. On February 4, 1999, 32 days before the first trial the court granted Plaintiffs leave to add witnesses neurosurgeon Dr. John White, a neuroradiologist Dr. Gary Stimac and allowed neurologist Dr. Richard Rubenstein to change his testimony.
- d. In fact Dr. Rubenstein testified that until several days before his second deposition on February 8, 1999 when he talked to Dr. Stimac he was unaware of the existence of subgalea edema on Plaintiff's scalp, Plaintiff's evidence of direct force causation of the subdural hematoma.
- e. On February 4, 1999, 32 days before trial defendants were ordered to redepose Rubenstein on Monday, February 8, 1999, near San Francisco, California, to take White's deposition on, Tuesday, February 9, 1999 in

Portland, Oregon, and Dr. Gary Stimac on Wednesday, February 10, 1999 in Seattle, Washington. These depositions were transcribed and received on February 17 and 18, 1999. Thus leaving defendants 19 days before the trial to develop rebuttal testimony.

- f. In view of these new witnesses and the newly alleged subgalea hematoma, Defendants talked to three people. Dr. Larry Thibault a biomechanical engineer who reviewed White, Stimac, Rubenstein and Stalnaker's depositions and he testified at trial. The other two people were Dr. Jones and Dr. Alshare. These two men hold very significant opinions which are material to the defense. One, Dr. Alshare believed the subgalea edema to be non-existent. What Stimac, White & Rubenstein were calling subgalea edema was distortion of the subgalea area from the position of the head. Dr. Jones, a neuropathologist, found evidence in the pathology slides that the subdural hematoma extracted from Jose Rodriguez was of an age that preceded the event play in question when Plaintiff was tackled. The evidence of a pre-existing brain injury is consistent with the testimony that the Plaintiff had been complaining of headaches prior to the game.
- g. Because of the short amount of time Defendants were not able to present these witnesses for a deposition as ordered by the Court on one days notice and this trial court refused to allow them to testify live or their opinions to be relied on by other defendants experts. Defendants need the additional time to procure the presence of these witnesses for trial. While denying Defendants the use of neuropathologist Dr. Jones, the court allowed

Plaintiffs to add yet another witness, a neuropathologist Dr. Hannes Vogel during trial.

- h. During trial Plaintiffs were allowed to add a new expert, a neuropathologist Hannes Vogel. This was after denying defendants the right to allow experts to rely on Dr. Jones aging of the pathology slides.

8. If this court will allow adequate time, Defendants will be able to present testimony of a neuroradiologist and a neuropathologist and establish that 1) the subdural hematoma of the Plaintiff was older than the time lapse between the date and time of the play and the admission to the hospital and that, 2) the subgalea edema is non-existent and that there is simply positioning of the head with regard to the x-ray equipment that makes it appear as if there is subgalea edema, in other words, the alleged subgalea edema is simply positional and fictional, and 3) that other evidence relied on the CT scans is not evidence of brain bruising or contusions but infarcted tissue that died as a result of the subdural hematoma. The importance and relevance of this is that if the jury believes there was no direct blow that was the cause of the subdural hematoma and realizes that the subdural hematoma was caused by rotational forces then the helmet is exonerated. The helmet is not designed to stop rotational forces. Because Plaintiffs' addition of a neuroradiologist after closure of discovery and neuropathologist during trial Defendants cannot successfully rebut such without a neuroradiologist and neuropathologist. This testimony is unavailable from any other source other than additional witnesses.

Hannes Vogel deposed at 10:00 a.m. during the second day of trial and Mr. Kamitoma represented to the court that "Well you allowed us to bring him in as a rebuttal witness to their neuropathologist Dr. Ommaya." This is not true. Dr. Ommaya consulted

with a neuropathologist that the Court would not allow to testify in this lawsuit because he could not be produced for deposition on such short notice, but the court prejudiced the rights of the Defendant by going ahead and letting the Plaintiff add a neuropathologist to rebut opinions of Dr. Ommaya. This gave the Plaintiffs an undue advantage. The Court if it was going to be fair and to prevent a manifest injustice would have allowed Defendant to have adequate time to obtain a neuropathologist for purposes of aging the subdural hematoma. Again, the Court is refusing to allow this party adequate time to reopen discovery so that we can get a neuropathologist to come and testify what the true facts are or in the alternative go to Washington D.C. and take the deposition of Dr. Jones.

The Court itself in its examination of Dr. Vogel, Plaintiff's neuropathologist has made it patently clear that this party should have a neuropathologist and a neuroradiologist to testify especially in order for this party to be on an equal footing with the Plaintiffs and have a fair chance of presenting its best evidence from the best source available to the Jury so the Jury can reach determination based upon both sides being able to present their side of the x-rays and the pathology slides. This is made crystal clear by the following examination of Dr. Vogel by the Court:

SF1428/9 - 25

- 9 THE COURT: Basically that's what they mostly do,
- 10 just neurological -- neuroradiology?
- 11 THE WITNESS: Exactly.
- 12 THE COURT: In that specialization?
- 13 THE WITNESS: Yes.
- 14 THE COURT: What about a neuropathologist? Is that
- 15 your specialization?
- 16 THE WITNESS: Yes, sir.
- 17 THE COURT: And is that what you basically do all the
- 18 time, examine and investigate specimens that are presented to
- 19 you?
- 20 THE WITNESS: Yes.

21 THE COURT: Does that include blood samples?
22 THE WITNESS: Yes.
23 THE COURT: And is that what you do all the time?
24 THE WITNESS: I get samples from subdural hematomas
25 at least two or three times a month.

During the argument of the prior case Plaintiff was able to effectively argue "The only neuroradiologist, the only person who makes a living reading cat scans of people's brains for neurosurgeons said, etc.

Likewise, with regard to neuroradiologist the Plaintiff argued to the jury about Plaintiffs bringing a neuroradiologist, somebody who does nothing but read brain x-rays for neurosurgeons like Dr. Ommaya.

9. Beginning in about 1995 a study of head injuries in the National Football League was begun. We will call this the National Football League study. In general, the National Football League study consisted of various National Football League football players being tested prior to the beginning of the season and when during the season any of these players sustained a concussion several things would happen. One, they would be reevaluated after the game. Two, videos of the play in which they sustained the concussion would be collected and analyzed. In general, the purpose of this was to determine the causes of brain injury in football games. Since the last trial of this case a study for the NFL has been completed by Dr. James Newman a biomechanics engineer. The data collected during this study and the conclusions reached by Dr. Newman clearly demonstrate the effectiveness of the Riddell VSR-4 helmet, the very helmet that plaintiffs claim that was defective. In part, this effectiveness is demonstrated by the fact that none of the players received a subdural hematoma because the helmet was effective in preventing subdural hematomas. This study and the material developed during the study will also make it clear

that these National Football League injuries involve greater speeds, forces, and energy than could have ever been sustained by the plaintiff in the play in question. This new evidence is essential and material for the defense of this case and was not available at the time of the first trial. We believe that the NFL videos analyzed by Dr. Newman and his staff will provide comparative videos to analyze with the game film in question to refute Dr. Stalnaker's testimony that Plaintiff was traveling at 22 feet per second.

10. Prior to the last trial, Defendants had obtained the services of Dr. Kenneth Clarke. Dr. Clarke wrote the article, attached is Exhibit A. Without giving the defendants an opportunity to present Dr. Clarke qualifications and the data he would be relying on in this case the court struck Dr. Clarke upon representation by Plaintiffs that in 1982, an Illinois Intermediate Court of Appeals had denied admission of testimony by Dr. Torg claiming that the data that he relied on in the Illinois case was not scientifically acceptable. Dr. Torg's data was among the evidence analyzed by Dr. Clarke for historical perspectives. The court did not allow defendants the opportunity to present any evidence with regard to the data used by Dr. Clarke in the instant case and to establish that it was reliable. In view of these actions by the court, Defendants have retained Dr. Robert C. Cantu a neurosurgeon with significant practice in and publications pertaining to brain injuries in sports and Dr. William Queale an internist specializing in sports medicine and epidemiology. One-hundred twenty days is needed for these witnesses to have adequate time to review and familiarize themselves with the issues in this case. The testimony of Dr. Clarke, Dr. Cantu and Dr. Queale is material and relevant to the issues herein because it statistically refutes opinions of Plaintiffs chief expert Dr. Stalnaker that the VSR-4 is defective and resents somewhere between an 8-18% chance of obtaining an AIS4 injury.

During the course of our trial, Plaintiffs' counsel and the Court usually asked questions and led the Jury to believe that there was anywhere from a 6-20% probability of a subdural hematoma or AIS4 category injury. If these were the facts there would be anywhere from 75,000 to 360,000 such injuries each year. These are not the facts. This is clear from the article of Kenneth S. Clarke, defendant's witness, however, because the Court erroneously refused to allow Dr. Clarke to testify to the true facts with regard to the true facts with regard to the number of subdural hematomas occurring in football it was never brought to the jury. This allowed for a gross misstatement and distortion in injuries received by football players. If the Court does not allow Dr. Clarke to testify or allow Defendant a reasonable opportunity and amount of time to obtain the services of and develop testimony to the number of subdural hematomas occurring in football each year this travesty and distortion of the truth will continue to the prejudice of this party.

During the trial of this case it is anticipated because in the trial of the last case the Plaintiff took the position that manufacturing a football helmet to the NOCSAE standard is a minimum standard and that you should do better by at least 20%. Defendant's rebuttal to this is Kenneth Clarke's and his attached article, this evidence is essential and material because if you accept as true Plaintiff's allegation and their witness Stalnaker's testimony that you should exceed the NOCSAE standard by 20% you may be creating additional hazards for football players because if the football helmet is too hard it doesn't offer adequate protection and if it is too soft it doesn't offer adequate protection and it is rank speculation on the part of Stalnaker to try to say that making it 20% better improves the helmet without any scientific testing or data to back it up.

11. Thad Ide is a biomechanical engineer. He was employed by Riddell from July

13, 1992 to August 24, 1993. At the time of the last trial he had been replaced by Dan Kult who is no longer an employee of Riddell. However, Thad Ide returned to Riddell on September 1, 2000 and is presently there. Thad Ide's testimony is material because he was involved in the design of helmets at Riddell. He was involved in the design of testing various components of the VSR-4 helmet which were used in other models of helmets and his testimony is essential for this party to present to the jury why the VSR-4 helmet is effective and is not defective.

12. Mr. Richard Lester has been general counsel for Riddell, Inc. since the late 1970's. His wife had one hip replacement surgery on April 2, 2001, and is due for an additional hip replacement in May of 2001. Mrs. Lester is only 53 years of age. She had to have the first hip replacement because one leg was shorter than the other one by several inches this had given her a lifelong noticeable limp. When the hip was replaced the leg was lengthened. This means Mrs. Lester will be non-weight bearing on this leg for many months. She cannot drive and is unable to take care of her personal needs until after June 30, 2001. Mr. Lester has been present at all trials involving Defendant since 1980 and has supervised and been involved in all cases. Because of this he is of significant assistance to trial counsel and to the adequate representation of defendants in this trial. His importance is to be able to offer explanations and sources of rebuttal evidence when Plaintiff's make spurious statements during trial.

13. Testing on the football field in question was performed by Defendant's prior to the last trial. Testing consisted of a NOCSAE apparatus being placed on the football field and the helmet being dropped on the field rather than on the anvil as required by the NOCSAE standard. The purpose of this test was to demonstrate that Dr. Stalnaker was

clearly in error when he said what the severity index that occurred in the play in question was. At the time of trial the court refused to allow this testing saying that it was done in a different time and under different conditions therefore, this testing needs to be redone and this request that this case be continued until after August 24 the date upon which the injury occurred in 1995 so that on that same day in 2001 the testing can be redone to duplicate what would have happened when plaintiff's head hit the playing field. Or, alternatively Defendants need to do experimental tests to demonstrate that hitting the turf or playing field irrespective of the day, or the weather conditions, is essentially the same so long as there is growing green grass. Attached is Exhibit B is an article by Nelson Kraemer and Dave Halstead that have previously established this that which the court refused to listen to or to accept.

14. We need to redepose the Plaintiffs. It has been 763 days since the last trial and the defendants need to redepose the Mother and brothers sisters who have been providing care for Jose Rodriguez and to obtain updated medical billing from Plaintiffs and Intervenor. This updated discovery is relevant to the issue of damages and projections of future damages as testified to by Plaintiffs' expert Dr. Goka and to discovery whether or not Jose Rodriguez's medical condition has changed which could effect his life expectancy. Defendant has insufficient time to prepare these discovery matters. We need to know what the medical expenses have been and who the medical providers have been since the last trial.

15. Dr. Fennegan a neurosurgeon in Harlingen, Texas was Jose Rodriguez's treating neurosurgeon who operated on him to remove and repair the damage from the subdural hematoma. Initially, Plaintiffs designed him as an expert witness. Subsequently,

defendant designated him as an expert witness as it was obvious he had to have some knowledge as to the operative facts in this lawsuit. Because of the doctor patient privilege Defendants never had private access to Dr. Fennegan. On December 10, 1998 Rex Blackburn represented that "As I indicated, we intend to call Dr. Fennegan to testify at trial. If you wish to depose him, feel free to do so." Defendants did depose Dr. Fennegan and he offered favorable testimony. Then in the Plaintiff's and intervenor's proposed pre-trial order Plaintiffs took the position that F.M. Fennegan, M.D. was defendant's expert. During trial Plaintiffs, trying to mitigate, dilute and alter the testimony of Dr. Fennegan obtained an affidavit in which he purports to change his opinions given in his deposition. Defendants need to depose Dr. Fennegan and conduct additional discovery to discover what the true facts are with regard to attempts to influence the testimony of Dr. Fennegan and to make a determination of whether or not there are facts that should be made known to the jury.

16. It has been 763 days since the last trial. We need to have an independent medical examination to determine Plaintiff, Jose Rodriguez's present state of consciousness and life expectancy.

17. Hannes Vogel deposed at 10:00 a.m. during the second day of trial and Mr. Kamitoma represented to the court that "Well you allowed us to bring him in as a rebuttal witness to their neuropathologist Dr. Ommaya." This is not true. Dr. Ommaya consulted with a neuropathologist that the Court would not allow to testify in this lawsuit no his opinion to be relied upon because he couldn't be produced for deposition on such short notice, but the court prejudiced the rights of the Defendant by going ahead and letting the Plaintiff add a neuropathologist to rebut opinions of Dr. Ommaya. This gave the Plaintiffs an undue advantage. The Court if it was going to be fair and to prevent a manifest

injustice would have allowed Defendant to have adequate time to obtain a neuropathologist for purposes of aging the subdural hematoma. Again, the Court is refusing to allow this party adequate time to reopen discovery so that we can get a neuropathologist to come and testify what the true facts are or in the alternative go to Washington D.C. and take the deposition of Dr. Jones.

18. Defendants directed interrogatories to Plaintiffs and Plaintiffs responded as follows: Defendant, Riddell, Inc. propounded interrogatories to Plaintiffs on 11-13-98; and Plaintiffs filed Plaintiffs' Supplemental Responses to Interrogatories and Requests for Production to Plaintiff Raquel O. Rodriguez, Individually and on behalf of Jose Rodriguez, on 2-23-99 (tab# 121).

Contained in these responses are various objections which the court needs to rule upon. More specifically this party, needs answers to the following:

3. INTERROGATORY: With regard to any alleged manufacturing defect or defective condition which you claim with regard to the football helmet or any part thereof which is the subject of this lawsuit, please identify and describe:

- a. each thing which you claim was defective,
- b. how or in what manner or what specific detail you claim each thing was defective,
- c. how you content that it should have been manufactured,
- d. the name or identity of each and every person or document you will present as evidence to support your contention that the helmet was defective,
- e. All photos, drawings, videotapes, motion pictures, documents, reports or other demonstrative evidence that you believe is relevant to the issue of manufacturing defect.

SUPPLEMENTAL ANSWER/OBJECTION: Plaintiffs object to this Interrogatory on the grounds that it calls for a legal conclusion and it requests information which is protected by the work product privilege. Subject to the original and supplemental objections, please refer to the depositions of Richard Stalnaker, Plaintiffs' and Intervenor's Pre-trial Order, and the Exhibit List attached thereto.

4. INTERROGATORY: If you claim that there was a defect in the design of the football helmet or any part thereof, please state:

- a. how or in what manner or in what particular, you claim that the football helmet or any part thereof was improperly designed,
- b. the specific differences between the manner in which the football helmet was in fact designed, and the manner in which you claim that it should have been designed,
- c. all photos, drawings, videotapes, motion pictures, documents, reports or other demonstrative evidence that you believe is relevant to the issue of design defect.

SUPPLEMENTAL ANSWER/OBJECTION: Plaintiffs object to this Interrogatory on the grounds that it calls for a legal conclusion and it requests information which is protected by the work product privilege. Subject to the original and supplemental objections, please refer to the depositions of Richard Stalnaker, Plaintiffs' and Intervenor's Pre-trial Order, and the Exhibit List attached thereto.

5. INTERROGATORY: If you claim that there was a defect in the football helmet because of the absence or inadequacy of a label on or instruction, warning or other written or oral item pertaining to the use and care of the football helmet, then describe:

- a. the difference between the labels and instructions, warnings or other written or oral items pertaining to the use and care of the football helmet that were on or supplied with the football helmet and the labels or instructions, warnings or other written or oral items pertaining to the use and care of the football helmet that you claim should have been or supplied with the football helmet,
- b. how and in what manner you claim that the difference which you have just described caused, produced or resulted in the alleged injuries to Jose Rodriguez, or would have prevented the alleged injuries to Jose Rodriguez,
- c. all photos, drawings, videotapes, motion pictures, documents, reports or other demonstrative evidence that you believe is relevant to the warning issue of design defect.

SUPPLEMENTAL ANSWER/OBJECTION: Plaintiffs object to this Interrogatory on the grounds that it calls for a legal conclusion and it requests information which is protected by the work product privilege. Subject to the original and supplemental objections, please refer to the depositions of Richard Stalnaker, Plaintiffs' and Intervenor's Pre-trial Order, and the Exhibit List attached thereto.

6. INTERROGATORY: Please identify, by name and address, all physicians, surgeons, chiropractors, osteopaths, psychiatrists, psychologists, physiologists or other practicing members of the healing arts or hospitals, pharmacies or other institutions who have rendered medical treatment or furnished medicines, drugs or supplies to you for any

injuries or pain resulting from the occurrence made the basis of this lawsuit.

SUPPLEMENTAL ANSWER/OBJECTION: Please refer to Exhibit "C" to Plaintiff's Answers to Interrogatories from Rubatex Corporation which was served upon Riddell.

10. INTERROGATORY: Please identify, by full name and address, each person, including experts, having knowledge of relevant facts relating to the happenings or incidents referred to in your petition or your alleged injuries. Persons to be named in response to these questions should include, but not be limited to eyewitnesses, medical witnesses, experts or other persons having any opinions or knowledge relating to the happenings or incidents made the basis of this lawsuit, the cause thereof, or the damages resulting therefrom. For each person listed, describe the facts or discoverable matter about which they have knowledge.

SUPPLEMENTAL ANSWER/OBJECTION: Plaintiffs object to this Interrogatory on the grounds that it is over broad and unduly burdensome because it would require Plaintiffs to speculate as to whether certain people have knowledge of any relevant facts related to Jose's accident and injuries. Furthermore, Jose has been treated by numerous medical care providers. Subject to these objections, please refer to Plaintiffs' Witness List, Exhibit "A" to Plaintiffs' Answers to Interrogatories from Rubatex Corporation, Exhibit "C" to Plaintiffs' Answers to Interrogatories from Rubatex Corporation, and the list of deponents who have been deposed in this case.

11. INTERROGATORY: With regard to any expert who may be called as a witness in the trial of this cause, or whose work product forms a basis either in whole or in part of the opinions of an expert who may be called as a witness, state in detail:

- a. Name, address and telephone number.
- b. The subject matter on which the witness is expected to testify.
- c. The mental impressions and opinions held by the expert with regard to such subject matter.
- d. The facts known to the expert (regardless of when the factual information was acquired) which relate to or form the basis of any opinions held by the expert with regard to such subject matter.
- e. All tangible reports, physical models, compilations of data and other material prepared by each expert or for each expert to anticipation of the expert's trial or deposition testimony.

SUPPLEMENTAL ANSWER/OBJECTION: Please refer to the depositions of Dr. Richard Stalnaker, Dr. Rubenstein, Dr. Stimac and Dr. White. Please also see the reports, including supplemental reports of Emma Vasquez, Dr. Goka, Dr. Bass and Dr. Cassidy.

15. INTERROGATORY: If you contend that there is any football helmet, proposed helmet, or any other device, mechanism, or product, which, had it been worn by Plaintiff on the date of the occurrence made the basis of this lawsuit, would have prevented his injury or lessened the severity of such, then please identify each such helmet, proposed helmet, device, mechanism, or product fully by stating the name and address of its manufacture and/or designed, a description of it, and an explanation of how it would have prevented the injury or lessened the severity of such injury.

SUPPLEMENTAL ANSWER/OBJECTION: Please refer to the deposition testimony of Dr. Richard Stalnaker.

8. REQUEST FOR PRODUCTION: Please furnish us with a copy of (a) Jose Rodriguez's income tax returns for the three (3) years immediately preceding the date of the occurrence made the basis of this lawsuit and any filed since that date, and (b) any documents or other verification of your rate of pay and actual time missed from work since the date of the occurrence made the basis of this lawsuit and sign the attached income tax authorization and Social Security Request for Detailed Earnings Information.

RESPONSE/OBJECTION: Plaintiffs are not in possession of any such documents which satisfy this request.

9. REQUEST FOR PRODUCTION: For each witness that you may elicit expert opinion testimony from at the trial of this lawsuit to support your claim or to refute the defenses of any defendant, please provide us with the following:

- a. A written or other documentation concerning all factual observations, tests, supporting data, calculations, physical models, photographs, videotapes, motion pictures and opinions of each expert witness, including but not limited to any reports prepared by or under the direction of such person, including any recording or transcripts thereof of any oral report;
- b. A copy of the expert's resume or curriculum vitae detailing all of his professional qualifications, publications and speeches, copies of all papers, articles or publications he has authored, in whole or in part, which have any relevancy, whatsoever, to demonstrating or proving his qualifications as an expert on the subject matter of this litigation, the services which he may be rendering in connection with this litigation, or the testimony which the expert may give the jury in this lawsuit;
- c. A list of all lawsuits in which the witness have been an expert or consulting expert, including cause number, style of the case and the Plaintiffs' or Defendants' attorneys' name, a list of all lawsuits in which the witness has been an expert or consulting expert, including cause number, style of the case and the Plaintiffs' or Defendants' attorneys' name.
- d. A list of all lawsuits by cause number, style, and court in which the witness

as appeared live and testified as an expert for either the plaintiff or the defendant.

- e. If any discoverable factual observations, tests, supporting data, calculations, photographs, videotapes, motion pictures, or opinions of any expert witness have not been recorded or reduced to a tangible form, then this party requests such matters be reduced to tangible form and produced.

RESPONSE/OBJECTION: Plaintiffs object to this interrogatory to the extent it seeks production of information beyond what is required by F.R.C.P. 26(a)(2). Subject to the original and supplemental objections, this information has already been provided to defendants.

14. REQUEST FOR PRODUCTION: Please furnish a copy of all written or other documentation of any inspection, examination, test, or analysis of any portion of the football helmet involved in the accident made the basis of this lawsuit, or the scene of the accident in question, or any portion thereof made at any time.

RESPONSE/OBJECTION: Please see the exhibits attached to the deposition of Dr. Stalnaker, copies of which have already been provided to Defendants.

19. Robert Guerra represents Genesis Engineering Group and is in court ordered mediation set for April 25, 2001, but may carry over April 26 and 27, in Rio Grande City Consolidated I.S.D. and Rio Grande City Consolidated I.S.D. Public Facilities Corporation Vs. Landmark Institutions, Inc., C.F. Jordan Commercial, L.P., Cris Equipment Company, Inc., Sooner Roofing, and Lopez and Lopez Architects, Inc. Vs. Third Party Defendants Rio Grande Steel, South Texas Woodmill, Inc., Solis & Chapa Construction, L & M Masonry Construction, Inc., Bowman Distributing Company, Inc., D & F Industries, Inc., Faires Plumbing Co., Juan Saenz D/b/a Saenz Construction, Gutierrez Construction, Vera Engineering, Inc. and Robert W. Beattie, Jr., 381st Judicial District, Starr County, Texas.

20. Robert Guerra represents Genesis Engineering Group and is specially set for trial April 30, 2001 in Cause Number C-1038-00-b, Pharr-San Juan-Alamo Independent School District, 93rd Judicial District, Turner Construction Company, of Texas, Inc., Lopez & Lopez Architects, Inc., D & F Industries, Inc., and Genesis Engineering Group, Inc. Vs.

Third Party Defendants Perspectiva, Ward Systems & Services, Inc., Cel-Ana Roofing Co., Inc., Coastal Engineering, Inc., Valley Insulation Co., Inc., Crown Insulation, Inc., Drury South, Inc., Joe Williamson Construction Company, Inc., Carrier Corporation, P.H.I. Service Agency, Inc., Stronghold Masonry, Armor Sealants & Firestopping, San Antonio Floor Finishers, Inc., Tri-city Steel & Fab, Inc., Cris Equipment Company, Raba-Kistner Consultants, Inc., Link & Associates, Inc., in the 93rd Judicial District, Hidalgo County, Texas.

21. Robert Guerra represents Genesis Engineering Group and is specially set for trial May 14, 2001 in Rio Grande City Consolidated I.S.D. and Rio Grande City Consolidated I.S.D. Public Facilities Corporation Vs. Landmark Institutions, Inc., C.F. Jordan Commercial, L.P., Cris Equipment Company, Inc., Sooner Roofing, and Lopez and Lopez Architects, Inc. Vs. Third Party Defendants Rio Grande Steel, South Texas Woodmill, Inc., Solis & Chapa Construction, L & M Masonry Construction, Inc., Bowman Distributing Company, Inc., D & F Industries, Inc., Faires Plumbing Co., Juan Saenz D/b/a Saenz Construction, Gutierrez Construction, Vera Engineering, Inc. and Robert W. Beattie, Jr., 381st Judicial District, Starr County, Texas.

22. Robert Guerra represents Harlingen Glass Co., Inc. and is specially set for trial May 21, 2001 In Cause No. 98-11-4477-E, Dora Garza, Individually and in the District Court as Representative of the Estate of Jose Garza, Deceased, Jose Alan Garza, Individually and Brenda Marroquin, Individually C & S Grill, Inc., A/k/a Sun Valley Supermarket D/b/a El Globo Supermarket #2 Vs. Third Party Defendant Harlingen Glass Co., Inc., 357th Judicial District Court, Cameron County, Texas.

23. David Halstead is unavailable most of the month of May. He is attending a

meeting at the Washington Secondary School Athletic Administrators Assn., in Spokane, Washington April 21-25, 2001; on April 27-29, 2001 he is participating in cadaver testing at the University of Tennessee involving University of Louisville School of Medicine, University of Tennessee and Bellarmine College; he is scheduled to be in Salt Lake City, Utah on a separate legal matter May 1 and 2, 2001; he has a meeting May 3 and 4, 2001 with Hillerich & Bradbury, Inc. to discuss a new product, on May 6 and 7, 2001 he is Chairman of the Hockey Equipment Certification Meeting in Phoenix Arizona, May 7 and 8, 2001 he is an official United States Representative to the ISO Hockey Meeting, Phoenix Arizona and he is the Chairman of the ASTM meeting May 8 -12, 2001 in Phoenix, Arizona and every spare moment before these meetings he is preparing for the meetings. He has scheduled a vacation May 20-26, 2001. Not only is he not available to come to Brownsville to testify, he does not have sufficient time to review the voluminous documents and depositions in this complex products liability lawsuit and prepare for and travel to Brownsville to testify. He is available and willing to come to Brownsville to testify anytime after June 4, 2001 with adequate notice so that I may review all the documents and depositions and prepare to testify. Mr. Halstead testimony is relevant and important because it is essential to establish the capabilities of and the success of the VSR-4 helmet. He is the only witness that routinely and for his livelihood tests the helmets of all the helmet manufacturers and reconditioners in the United States. He is the technical advisor to NOCSAE, the only organization that has established standards for the manufacture of helmets. Further, he is the only independent witness that has tested the alleged safer alternative design and can offer testimony that it is not a safer alternative design.

. His affidavit is attached as Exhibit C.

24. Thomas A. Gennarelli is lecturing out of the country in Moscow, Russia from May 10, 2001 until May 17, 2001 then he travels to Athens, Greece on May 17, 2001 until May 21, 2001, and he is in Cleveland, Ohio May 21, 2001 through May 22, 2001. He is on call for my neurosurgery practice May 1, 2001 through May 10, 2001 and also preparing for the lectures. When he returns from the lectures and from May 25, 2001 through June 5, 2001 he is on call for his neurosurgery practice and for other physicians who will have covered his practice for me while he was away. He is available and willing to come to Brownsville to testify anytime after June 5th with adequate notice so that he can make sure he has another doctor available to take care of his patients. Dr. Gennarelli's testimony is relevant and important because he is an internationally recognized expert that is neurosurgeon who has done extensive experimental research and written extensively upon the mechanism of brain injuries. He is the only witness that can testify that a subdural hematoma is like a tumor it starts off small and grows larger. He is the only witness that has testified that the subdural hematoma could be caused by a congenital condition, could be spontaneous or could be caused by rotational forces, but could not be caused by direct, linear translational forces. His affidavit is attached as Exhibit D.

25. Dr. Larry Thibault is testifying in another trial the week of May 22nd and is on vacation in Europe May 24th through June 4th.

26. Dr. Ayub Ommaya is out of the country and he will not return until April 30, 2001 and we cannot talk with him until then so we do not know his schedule.

29. This request for continuance is not for delay only, but that justice may be done.

30. This request for continuance will not prejudice Plaintiffs because Jose

Rodriguez is in a persistent vegetative state, unaware of where he is or his surroundings. He has no meaningful life. All of his health care expenses are presently being paid by social security, medicaid or medicare.

31. Defendants will suffer actual and substantial prejudice if it is not permitted to take depositions, obtain updated medical and billing, present the witnesses aforementioned live at the time of trial. The lead defense attorney has the right to make the determination of whether he will present the witness by deposition or live at trial, it is not up to opposing counsel nor the court to make that decision.

C. Conclusion

32. For these reasons, defendant asks the court to continue this case for at least 120 days until August 2001.

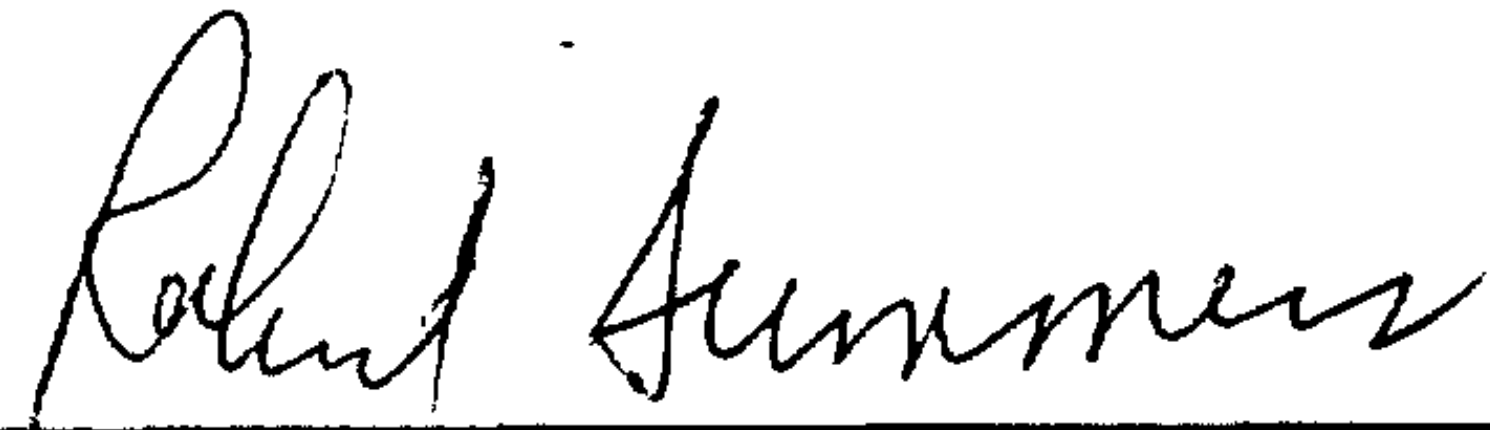
,

Respectfully submitted,

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BY



ROBERT B. SUMMERS
State Bar No. 19507000
ANN H. MEGEE
State Bar No. 13902700
Attorneys for Defendants

CERTIFICATE OF CONFERENCE

This is to certify that I had a conference with Plaintiffs' counsel, Rex Blackburn,
and he refused to agree to this motion.



Robert Summers

CERTIFICATE OF SERVICE

This is to certify that a true and correct copy of the above was forwarded by
telefax transmission and certified mail, return receipt requested to counsel of record on
this the 24th day of April, 2001.

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Robert Summers

Robert Summers

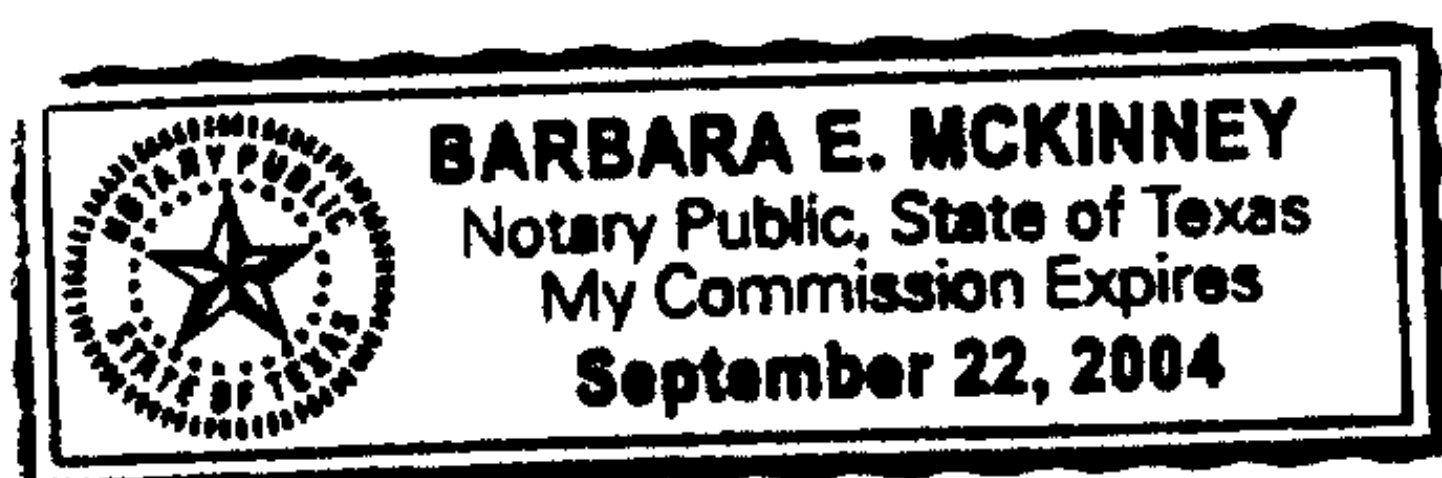
Robert Summers

STATE OF TEXAS

COUNTY OF LLANO

BEFORE ME, the undersigned authority, on this day personally appeared, Robert Summers, known to me to be the attorney of record of Defendants herein, who on his oath did state that he has personal knowledge of the facts contained in the foregoing Motion for Continuance, and that same are both true and correct.

SUBSCRIBED and SWORN TO before me, the undersigned authority, on this the 24th day of April 2001.



Barbara E. McKinney

NOTARY PUBLIC IN AND FOR THE
STATE OF TEXAS

My commission expires: 9-22-04

EXHIBIT "A"

EXHIBIT "A"

pine injury, i.e., boxing, football,
 ewarding intellectual experience
 to this monograph, and I most
 ling our effort.

C. CANU, MD, FACS, FACSM
Guest Editor

NEUROLOGIC ATHLETIC HEAD AND NECK INJURIES 0278-5919/98 \$8.00 + .00

EPIDEMIOLOGY OF ATHLETIC HEAD INJURY

Kenneth S. Clarke, PhD

FOOTBALL FATALITIES

The Football Helmet Controversy

In 1962, the American Medical Association's (AMA's) newly established Committee on Medical Aspects of Sports hosted the "National Conference on Head Protection for Athletes," which convened authorities of that era in the emerging field of "sports medicine" to discuss current issues.¹³ Football became the focus, as it is now, and the efficacy of the recent changes in the football helmet and the advent of the football face mask concerning catastrophic injury became the issue. "Catastrophic injury" was and is focused on neurotrauma.

In 1931, the annual Football Fatality Report was initiated under the aegis of the American Football Coaches Associations with the endorsement of the organizations responsible for interscholastic and intercollegiate football,¹⁴ the forerunner of today's efforts to track epidemiologically all catastrophic injuries in sports, and had revealed a significant upward trend of head/neck deaths since the mid-1950s. It was during this time that organized football adopted the new hard-shelled helmets being produced and then added the new face masks.

By 1962, it had become an ironic realization that the first fruits of organized administrative action to safeguard the athlete were characterized epidemiologically as having resulted in a higher incidence of catastrophic injury among those at risk. It is also ironic that these data demonstrated the functional value of ongoing epidemiology of signifi-

From Risk Analysis, SLE Worldwide, Inc., San City, California

CLINICS IN SPORTS MEDICINE

VOLUME 17 • NUMBER 1 • JANUARY 1998

1

PREFACE

2 CLARKE

cant injuries in sports. This was good for sports at that time. Sports had escaped public attention to accompanying injuries, and little "research-worthy" data accompanied any declaration of cause and solution of a problem that had been shared. Unfortunately, except for football and a few isolated registries for catastrophic injury, sports continue to "escape" epidemiologic attentions to cerebral injury.

The Applicability of Epidemiology to Sports-Injury Issues

Epidemiology emerged from public health interests as the tool for learning the incidence of a given disease in a population and, for preventive efforts, the factors associated with that incidence. "Incidence" is the frequency of occurrence in a known population expressed as a "rate," that is, 10 cases per 100,000 persons who could have experienced such an occurrence. Epidemiology, however, cannot be left to mere relative frequencies. Of concern are the factors associated with that frequency or with a change in that frequency (internal patterns). Basic to "applied epidemiology," therefore, is a universally understood definition of what is to be reported should it occur, a repository for receiving all reported occurrences, and a reasonable estimate of the number of persons at risk (i.e., those to whom it could have occurred).

What had been lacking in sports as well as society was the consideration of "injuries" as a disease having the same host, cause, and environment trilogy of relationships that helped epidemiology characterize the infectious diseases of the early 20th century. Those with access to sports-injury data often attempt to characterize such factors but must rely on the information that is obtained with reasonable reliability. The US Consumer Product Safety Commission (CPSC), for example, can project that head injuries constitute about 30% of all consumer-product-related hospital emergency room visits, that about 15% of these head injuries were concussions or fractures (unfortunately including the nose), and that the overall hospitalization rate of a head injury is about 3%.⁷ Although it did not provide a percentage that came from "sports," the incidence (with the general population as a whole considered at risk) for respective sports showed the top five being basketball (258 in 100,000), bicycles (233 in 100,000), baseball (174 in 100,000), football (167 in 100,000), and playground equipment (102 in 100,000). Identification of the activity along with the person's age and sex constituted the accompanying factors that they were able to obtain.

It should be added, however, that if one looks at cerebral insult, invariably, including that provided by CPSC above, the incidence is highest for those age 5 years and younger.^{7, 11}

It should be added that this author purposefully ignored discussion of brain injuries in boxing, principally because of the absence of epidemiologic studies that characterize, by definition and reliable reporting, the gradual onset of chronic brain damage from repeated blows.

Epidemiology must also be a combined source of players. However, one study mentioned concussions in that sport. Promptly aware of the warning label on helmets since the late 1950s.

Many more considerations in epidemiology, including what followed is only a sample of a AMA Conference, however, five (even though it is mentioned at the time). They were of high school and college football that this was a national estimate of head/neck fatalities had 1954 to 2.35 in 100,000 in 1965 over that period were accepted shelled helmet and face mask equals the worst), fluctuation Murphy's law; it is the year examined.

Significance of the 1962 AL

The findings of that group since then, in other sports...

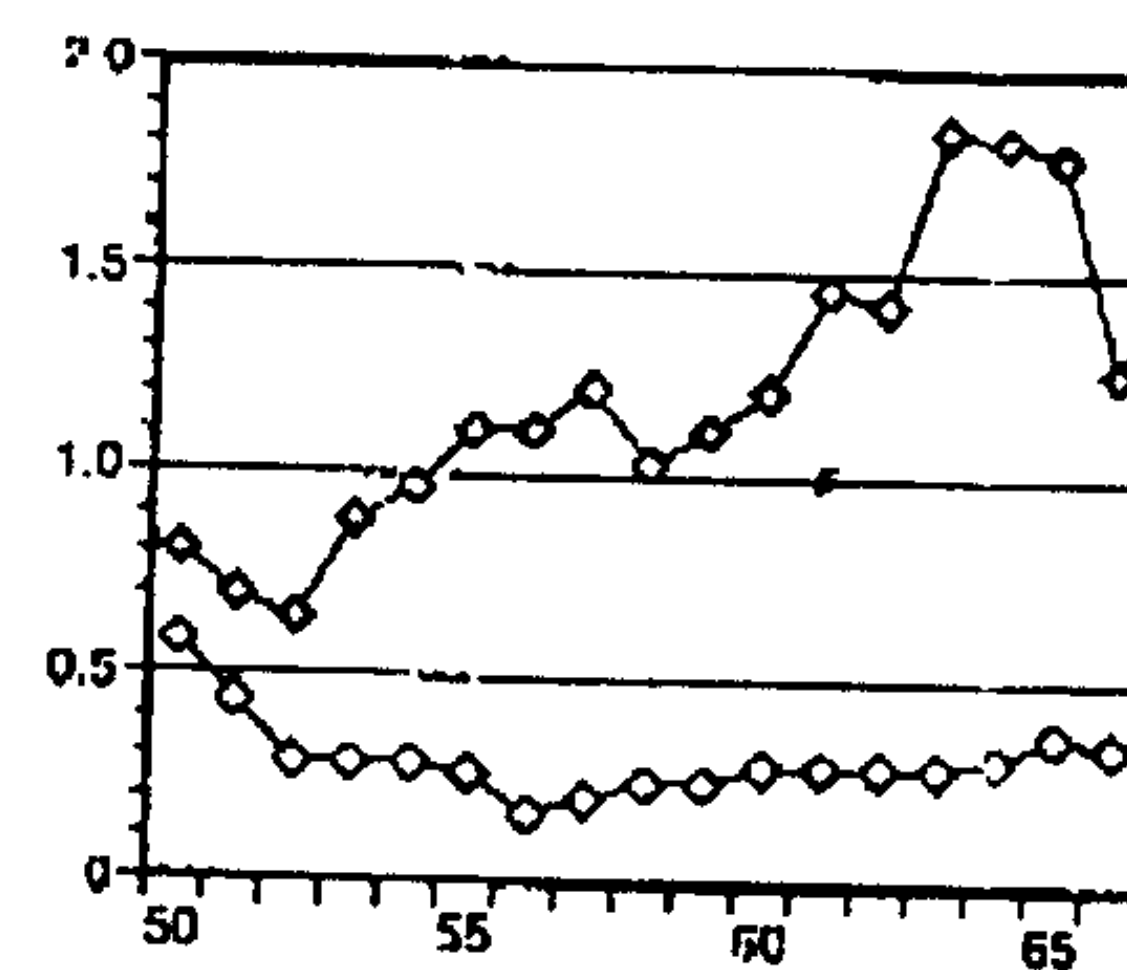


Figure 1. Head and neck fatalities per 100,000 athletes (Data from Annual Surveys of Football, The National Collegiate Athletic Association, The National High School Athletic Association, C Injury Research, 1996.)

sports at that time. Sports had injuries, and little "research" of cause and solution of a injury, except for football and a injury, sports continue to "escape"

Sports-Injury

health interests as the tool for use in a population and, for that incidence. "Incidence" in population expressed as a who could have experienced over, cannot be left to mere factors associated with that injury (internal patterns). Basic universally understood definition, a repository for receiving the estimate of the number of and have occurred).

all as society was the consideration same host, cause, and environment epidemiology characterize the view. Those with access to sports—such factors but must rely on reasonable reliability. The US CPSC, for example, can project all consumer-product-related at 15% of these head injuries (including the nose), and a head injury is about 3%.⁷ that came from "sports," the as a whole considered at risk) have being basketball (258 in 100,000), football (167 in 100,000). Identification age and sex constituted the to obtain.

one looks at cerebral insult, CPSC above, the incidence is 7.11

purposefully ignored discussion use of the absence of epidemiology and reliable reporting, the from repeated blows.

Epidemiology must also concern itself with awareness and education. One would think, for example, that football and concussions would be a combined source of concern among parents of young football players. However, one study¹⁰ has shown that only 7.7% of parents studied mentioned concussions in free association with the injury concerns in that sport. Prompted, 83% agreed, yet only about a third were aware of the warning label about head and neck injuries that have been on helmets since the late 1970s.

Many more considerations are fundamental to the helpful use of epidemiology, including when applicable if the population being followed is only a sample of all who are at risk. The scenario of the 1962 AMA Conference, however, enjoyed the basics from a natural perspective (even though it is most doubtful that "epidemiology" was mentioned at the time). They were aware of the estimated combined number of high school and college football players at risk (681,690 in that era), that this was a national estimate (not a sampling), and that the incidence of head/neck fatalities had risen consistently from 1.02 in 100,000 in 1951 to 2.35 in 100,000 in 1961 (Fig. 1). The associated factors of change over that period were accepted as being the advent of the new hard-shelled helmet and face mask in the conduct of organized football. With relatively small actual numbers of occurrences nationally in football (30 equals the worst), fluctuations were apt to occur occasionally thanks to Murphy's law; it is the year-to-year consistency in trends that must be examined.

Significance of the 1962 AMA Conference

The findings of that group in 1962¹¹ have been relived many times since then, in other sports^{1, 3, 6} as well as football—namely, (1) that the

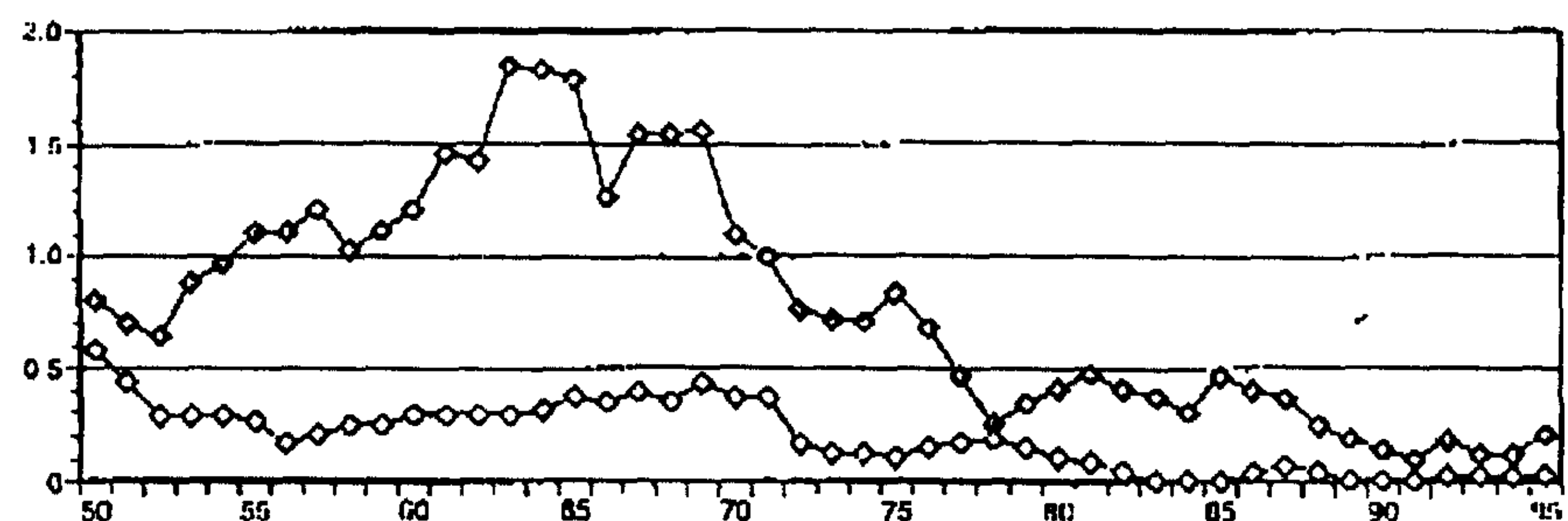


Figure 1. Head and neck fatalities for high school and college football (smoothed). Solid square = head only per 100,000 athletes; open square = neck only per 100,000 athletes. (Data from Annual Surveys of Football Fatalities: The American Football Coaches Association, The National Collegiate Athletic Association, and The National Federation of State High School Athletic Associations. Chapel Hill, NC, National Center for Catastrophic Sports Injury Research, 1996.)

4 CLARKE

advent of protective equipment requires performance standards that define that protective equipment for acceptability in use and (2) that the advent of effective protective equipment can/will change the behavior of the protected athlete to create new targets of risk. An explanation follows:

The 1962 conferees agreed that the new protective head gear was necessary for the protection of the player, but that coaching and officiating attentions were needed to curb the players' tendency to consider themselves invulnerable owing to that protection and thus to lead with the helmet in creating contact with their opponent. "Spearing" was labeled as the purposeful ramming of the helmet into the opponent, and allegations that it was done for the purpose of hurting that player as well as gaining a blocking or tackling advantage began to take root. As the 1960s continued, sports medicine/safety speakers warning against "spearing" became prevalent at football coaches meetings and the ever-increasing sports medicine conferences around the country. Yet few, if any, coaches were teaching spearing, helmets were still being produced by the theories of the competing manufacturers' engineers without the advantage of performance standards, and the incidence of head/neck fatalities continued to stay high, rising to a high of 3.52 in 100,000 in 1964 and still at 2.79 in 100,000 in 1968 (Table 1).

The Arrival of National Operating Committee for Safety in Athletic Equipment Standards

It was at this time that the football helmet manufacturers, school/college administrators, and researchers agreed to arrive at consensus standards for the protective head gear. It took several years for them to determine (1) that the ASTI Z-90 standard for motorcycle helmets was invalid because it relied on a "single-impact" test (whereas the football helmet had to withstand multiple impacts every day of contact); (2) that the ASTM system for establishing consensus standards would be too time-consuming to rely on for the earliest possible resolution of this problem; and (3) that they would organize a nonprofit organization, the National Operating Committee for Safety in Athletic Equipment (NOCSAE); many of them with ASTM experience, for equivalent purposes. They then contracted with Wayne State University for the research that would yield valid and reliable performance tests and the basis for consensus standards as to a threshold for acceptability of any football helmet of any engineering design.

The results of this research were not available until 1973 but interestingly, a decline in the incidence of head/neck fatalities in football had begun, presumably because the helmet manufacturers re-examined the effectiveness of their particular engineering qualities. The 1970 season was the last season above 2.0 in 100,000 (see Table 1). High school and college rules adopted NOCSAE-standards during the 1973 to 1974 school year requiring all football helmets to be worn after a given grace period

Table 1. COLLEGE AND HIGH

Year	Total
1995	4
1994	1
1993	4
1992	2
1991	3
1990	0
1989	4
1988	7
1987	4
1986	11
1985	6
1984	5
1983	4
1982	7
1981	7
1980	9
1979	4
1978	9
1977	9
1976	15
1975	14
1974	11
1973	7
1972	18
1971	18
1970	26
1969	19
1968	30
1967	19
1966	20
1965	21
1964	24
1963	12
1962	12
1961	16
1960	12
1959	10
1958	11
1957	14
1956	13
1955	7
1954	14
1953	8
1952	5
1951	7
1950	12

*Per 100,000 football players.
(Data from Annual Surveys of Football
National Collegiate Athletic Association
Associations. Chapel Hill, NC, Nation

performance standards that ability in use and (2) that the will change the behavior of risk. An explanation fol-

protective head gear was that coaching and officiat-ers' tendency to consider tion and thus to lead with opponent. "Spearing" was met into the opponent, and of hurting that player as age began to take root. As speakers warning against the meetings and the ever-nd the country. Yet few, if were still being produced ers' engineers without the ne incidence of head/neck high of 3.52 in 100,000 in 1).

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able until 1973 but interest-k fatalities in football had ifacturers re-examined the qualities. The 1970 season (Table 1). High school and ing the 1973 to 1974 school after a given grace period

Table 1. COLLEGE AND HIGH SCHOOL FOOTBALL FATALITIES (DIRECT ONLY)

Year	Total	Rate*	Head Only	Rate* Head	% Head
1995	4	0.25	4	0.25	100
1994	1	0.06	1	0.06	100
1993	4	0.25	3	0.19	75
1992	2	0.13	2	0.13	100
1991	3	0.19	3	0.19	100
1990	0	0.21	0	0.17	0
1989	4	0.25	4	0.25	100
1988	7	0.51	4	0.25	67
1987	4	0.29	2	0.15	50
1986	11	0.80	9	0.65	75
1985	6	0.44	5	0.36	83
1984	5	0.36	5	0.36	100
1983	4	0.29	4	0.29	100
1982	7	0.51	6	0.44	86
1981	7	0.51	6	0.44	86
1980	9	0.65	7	0.51	78
1979	4	0.29	3	0.22	75
1978	9	0.65	4	0.29	44
1977	9	0.65	3	0.22	33
1976	15	1.09	12	0.87	80
1975	14	1.10	12	0.94	86
1974	11	0.86	9	0.71	82
1973	7	0.55	6	0.47	86
1972	18	1.41	12	0.94	67
1971	18	1.41	11	0.87	61
1970	26	2.04	15	1.18	58
1969	19	1.62	15	1.28	79
1968	30	2.79	24	2.23	80
1967	19	1.77	12	1.12	63
1966	20	1.86	14	1.30	70
1965	21	1.95	15	1.40	71
1964	24	3.52	18	2.64	75
1963	12	1.91	10	1.47	77
1962	12	1.76	10	1.47	83
1961	16	2.35	9	1.32	56
1960	12	1.76	11	1.61	92
1959	10	1.47	5	0.73	50
1958	11	1.61	7	1.03	64
1957	14	2.05	9	1.32	64
1956	13	1.91	9	1.32	69
1955	7	1.03	5	0.73	71
1954	14	2.05	9	1.32	64
1953	8	1.17	6	0.88	75
1952	5	0.73	3	0.44	60
1951	7	1.02	4	0.59	57
1950	12	1.76	7	1.03	58

*Per 100,000 football players.

(Data from Annual Surveys of Football Fatalities: The American Football Coaches Association, The National Collegiate Athletic Association, and the National Federation of State High School Athletic Associations. Chapel Hill, NC, National Center for Catastrophic Sports Injury Research, 1996.)

(differing between high schools and colleges owing to the economics of helmet turnover), as well as continuing the antispearing warning but adding the necessity to fit the helmet to the player and to maintain the helmet's protective qualities. By 1976, the incidence had reached and plateaued at about 1.1 in 100,000. By this juncture in the history of football epidemiology, refinements in attention had matured.

REFINEMENTS IN THE EPIDEMIOLOGY OF SPORTS NEUROTRAUMA

Separating the Head From "Head/Neck"

The tradition of considering football catastrophic injuries as "head/neck" was realized as disguising the differing epidemiological patterns of catastrophic head and neck injuries, respectively. In 1966, Schneider (who was an active conferee in 1962) published his national survey of neurosurgeons as to the frequency and nature of football neurotrauma seen in their practice between 1959 and 1963.¹⁵ With a 61% response rate but a tabular display style that did not warn readers that the same case could appear in several tables, it was not as epidemiologically sound a study as one would hope. However, it reflected well the dominance of serious cerebral injuries over spinal cord injuries in frequency of occurrence at that time and the significance of concussions and subdural hemorrhaging in football. In 1968, the AMA published a booklet, *Standard Nomenclature of Athletic Injuries*,¹⁶ with Schneider as a member of the subcommittee that produced it, that gave needed credence to the concept that a concussion need not be a "knockout" to be diagnosed a concussion and thereby a possible precursor to the life-threatening subdural hematoma.

The annual football fatality data were thus reworked to distinguish epidemiologically the head-related death from the neck-related death. The incidence for head-related deaths for the years already discussed above as head/neck deaths 2.64 in 100,000 in 1964, 2.23 in 100,000 in 1968, and 1.18 in 100,000 in 1970 (see Table 1). Since 1955, only 1 year (1959) had an incidence below 1 in 100,000 (see Fig. 1).

The year-to-year fluctuation in small number frequencies, mentioned earlier, is often "softened" for the sake of reviewing trends by the practice of "smoothing" the rates of interest. That is, the annual incidence of occurrence (smoothed) for a given year is derived by combining that year's data plus that for the year before and the year after and averaging it for that year's rate. The result is a much easier observable trending of the occurrence of interest. Figure 1 was so prepared. More important than the year-by-year calculations, as discussed in the article by Scher elsewhere in this issue, the increase in incidence of deaths during the 1960s was essentially only caused by head-deaths, removing the helmet from a substantiated association (directly) with the incidence of neck-deaths as well as emphasizing the significance of

helmet standards to the in strengthened by the enac school and college levels head when tackling or blk of "spearing" as the basi taught. With less "expos the initial impact of a "h meeting NOCSAE standa dropped to a consistent 0.2 0.50 in 100,000 only twice

The Nonfatal Head-Related (Football)

It was not until the I Torg to track quadriplegi Cantu to track football fata nonfatal cerebral neurotrau damage'). Since 1986, 2 y trend line has been essent the incidence of permanen

Fatal and Nonfatal Head-Related (Other High School and College)

Table 3 was prepared concerning all summary of the National Center for Car was thereby provided for of head-related cases for epidemiologically for comp

Concussions

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OF SPORTS

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The vagaries of defining, observing, and reporting the concussion in football (as well as any other activity of life) has stifled use of epidemiological principles in learning its incidence of concussions. One 3-year study immediately after the presence of NOCSAE standards, using the definitions advocated by the AMA (N/F) plus the time-loss criterion of the National Athletic Injury/Illness Reporting System,⁴ found an annual incidence of 5.4 to 6.2 in 100 players for all reported concussions and 0.6 to 0.7 in 100 players for "significant" concussions (those keeping the athlete out of participation for at least 1 week).⁵ Designed to examine the factor of the brand and type of helmet worn in that era (early NOCSAE), each of the 12 helmets being worn with any frequency

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Table 2. HIGH SCHOOL AND COLLEGE FOOTBALL CEREBRAL INJURIES (PERMANENT)

Year	High School Total*	High School Rate† 100,000	College Total*	College Rate† 100,000	Combined Total	Combined Rate† 100,000
1995	2	0.13	0	0.00	2	0.13
1994	4	0.27	1	1.33	5	0.32
1993	5	0.33	0	0.00	5	0.32
1992	4	0.27	0	0.00	4	0.25
1991	3	0.20	1	1.33	4	0.25
1990	2	0.13	0	0.00	2	0.13
1989	6	0.40	0	0.00	6	0.38
1988	4	0.31	0	0.00	4	0.29
1987	2	0.15	0	0.00	2	0.15
1986	2	0.15	0	0.00	2	0.15
1985	4	0.31	1	1.33	5	0.36
1984	5	0.38	2	2.67	7	0.51

*Data from the National Center for Catastrophic Sports Injury Research

†Population size of high school and college football teams obtained from the AFCA Annual Surveys of Football Fatalities, Chapel Hill, NC.

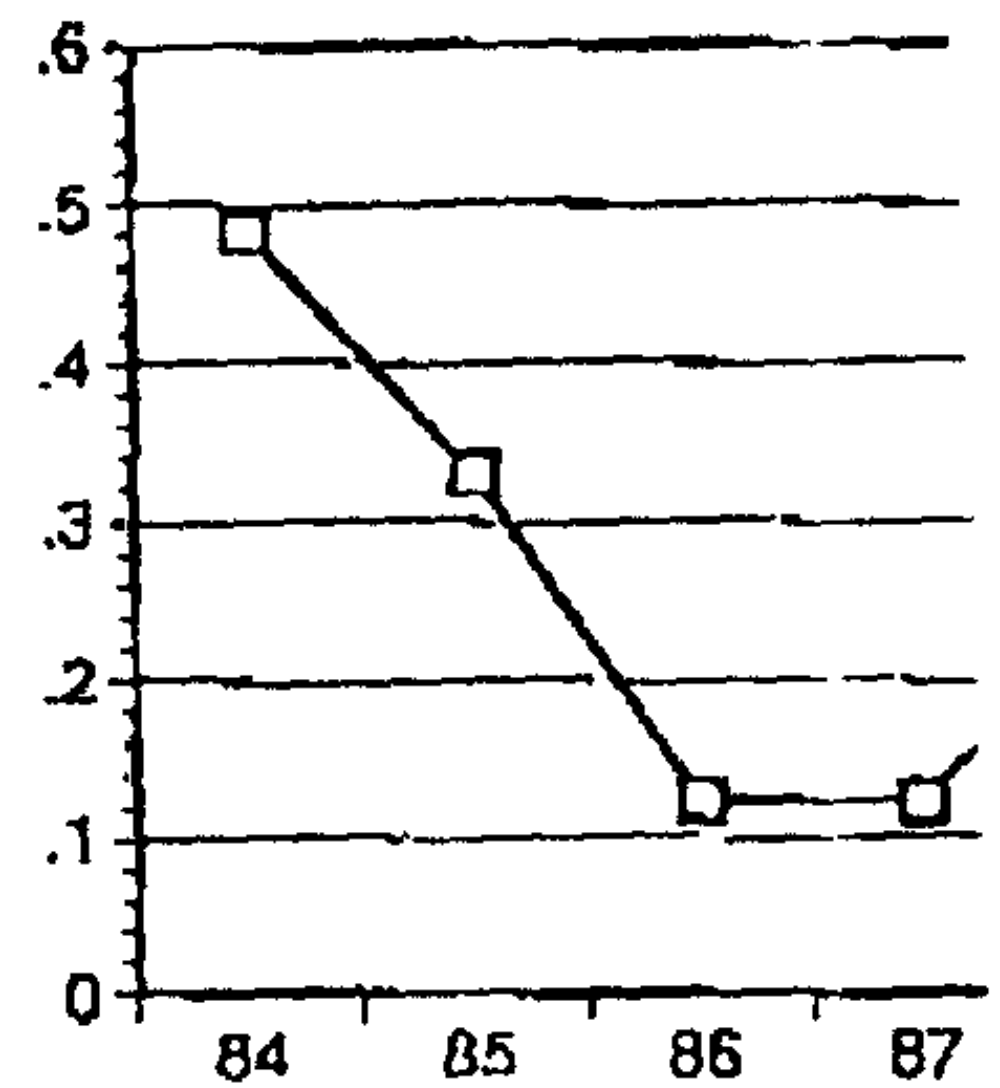


Figure 2. Nontotal cerebral injury incidence per 100,000 athlete exposure (1982-spring 1995). Chapel Hill, NC. (AFCA Annual Surveys of Football Fatalities, 1996; with permission.)

among the study group "significant concussion," athlete exposure is a practical measure and thereby had an opportunity to be evaluated (helmet). The rate for "nonfatal concussion" from 3 to 7 occurrences per 100,000 athlete exposure was much tightened to 5 helmets in common use.

From the same data for a total of 8 years, the rate for concussion was studied in offensive and defensive players.

Concussions as Precursors to Neurotrauma

Of critical concern is that may precede the onset of a concussion. If, totally, it is accepted that a concussion did not arise initially from an exacerbation of an earlier article by Cantu on Secor (issue). Since at least the need to encourage those who experience no postconcussion symptoms and to encourage the athletes to report headaches, dizziness, confusion, and other symptoms.

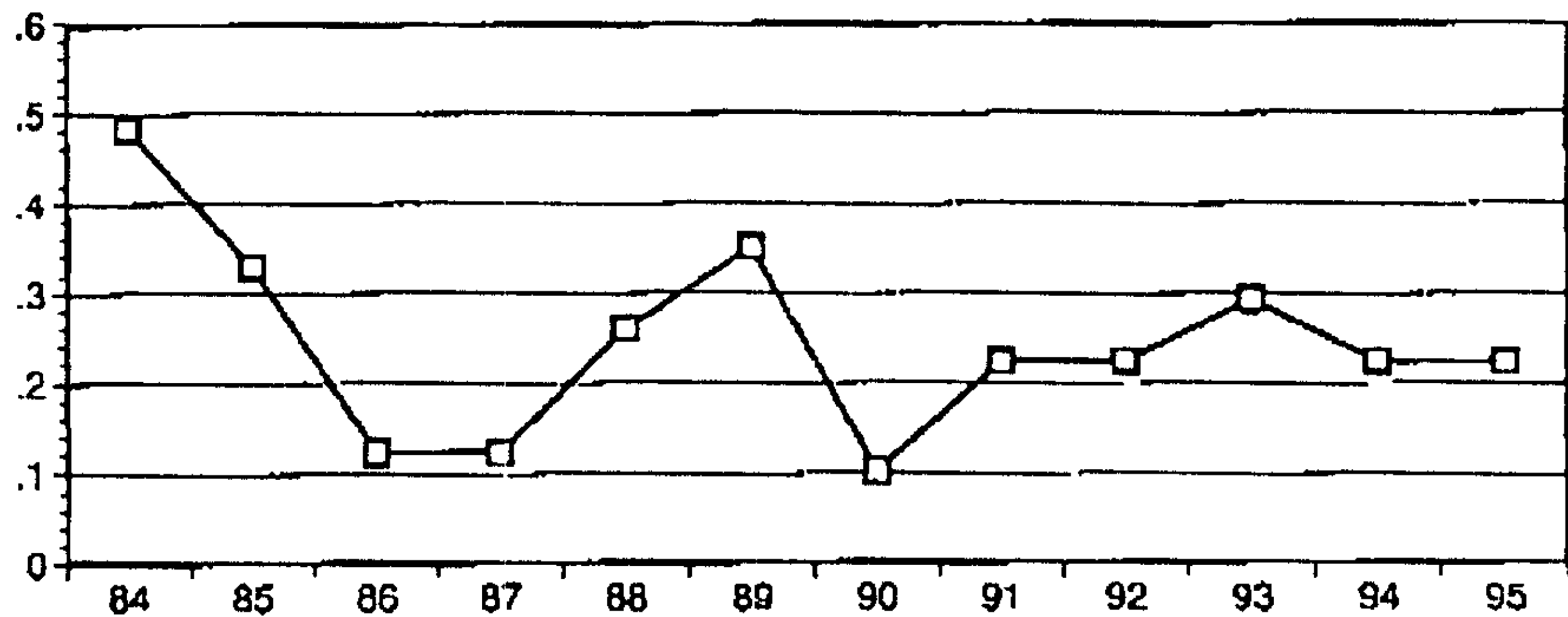


Figure 2. Nontatal cerebral injuries for high school and college football (permanent). Open square = incidence per 100,000 athletes. (From Cantu R: Thirteenth Annual Report [fall 1982-spring 1995], Chapel Hill, NC, National Center for Catastrophic Sports Injury Research, 1996; with permission.)

among the study group were associated with the same incidence of "significant concussion," for example, 0.1 in 1000 athlete exposures (one athlete exposure is a practice or game in which the athlete participated and thereby had an opportunity to be so injured while wearing that helmet). The rate for "reportable game-related concussions" (causing the player to be evaluated, whether returned to play or not), fluctuated from 3 to 7 occurrences per 1000 athlete-exposures, but such fluctuation was much tightened to 5.0 to 5.7 in 1000 athlete-exposures among the helmets in common use.

From the same database, limited to college football and extended for a total of 8 years, the factor of player and team activity accompanying concussion was studied in a multivariate manner.² Dominant were those offensive and defensive players involved in a block on a rushing play.

Concussions as Precursors to Catastrophic Cerebral Neurotrauma

Of critical concern is now the frequency and nature of concussions that may precede the onset of a fatal or nonfatal brain damage.¹² Anecdotally, it is accepted that many of the head-related fatalities in football did not arise initially from a blow on that given day, but from an exacerbation of an earlier concussive blow that had not healed (see article by Cantu on Second Impact Syndrome found elsewhere in this issue). Since at least the mid-1970s, educational efforts have been made to encourage those who evaluate athletes with concussions to be certain no postconcussion symptoms persist before authorizing a return to play, and to encourage the athletes to disclose symptoms of same, that is, headaches, dizziness, confusion, and nausea.

*Data from the National Center for Catastrophic Sports Injury Research.
†Population size of high school and college football teams obtained from the AFCA Annual Surveys of Football Fatalities, Chapel Hill, NC

1983
1984

5

0.38

2

2.67

7

0.51

Table 3. HEAD-RELATED CATASTROPHIC INJURIES IN HIGH SCHOOL AND COLLEGE SPORTS 1982-1995

Sport Level	Fatalities	Nonfatalities	Total Cases per Year	Annual Cases per 100,000 Athletes
Baseball				
High school	4	1	1.2	0.21
College	1	1	0.2	0.74
Basketball				
High school	0	1	0.1	0.17
College	0	1	0.1	0.56
Choorleading				
High school	1	6	0.5	Unknown
College	1	5	0.5	Unknown
Cross Country				
High school and college	0	0	0.0	0.00
Football				
High school	43	56	7.6	0.88
College	5	6	0.8	2.25
Gymnastics				
High school	1	0	0.1	0.43
College	0	0	0.0	0.00
Hockey (ice)				
High school	0	1	0.1	0.34
College	0	1	0.1	1.95
Lacrosse				
High school and college	0	0	0.0	0.00
Skiing				
High school	0	0	0.0	0.00
College	1	0	0.2	15.11
Soccer				
High school	2	4	0.5	0.14
College	0	0	0.0	0.00
Softball				
High school	0	1	0.1	0.03
College	0	0	0.0	0.00
Swimming				
High school	0	1	0.1	0.10
College	0	0	0.0	0.00
Tennis				
High school and college	0	0	0.0	0.00
Track and field				
High school	10	14	1.8	0.38
College	2	2	0.3	0.92
Wrestling				
High school and college	0	0	0.0	0.00

*Adapted from Mueller F, Cantu R: 13th Annual Report (fall 1982—spring 1995). Chapel Hill, NC, National Center for Catastrophic Sports Injury Research, 1995; with permission.

CONCLUSION

The incidence of head-related catastrophic sports injuries is documented beyond question. Catastrophic Sports Injuries I relies on existing statistics to minimize direct head trauma and practically evaluate the advantages of following preventive interventions of whatever nature would have to bring themselves.

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IN HIGH SCHOOL AND

Total Cases per Year	Annual Cases per 100,000 Athletes
1.2	0.21
0.2	0.74
0.1	0.17
0.1	0.56
0.5	Unknown
0.5	Unknown
0.0	0.00
7.6	0.88
0.8	2.25
0.1	0.43
0.0	0.00
0.1	0.34
0.1	1.95
0.0	0.00
0.0	0.00
0.2	15.11
0.5	0.14
0.0	0.00
0.1	0.03
0.0	0.00
0.1	0.10
0.0	0.00
0.0	0.00
1.8	0.38
0.3	0.92
0.0	0.00

1982—spring 1995). Chapel Hill, NC.
permission.

CONCLUSION

The incidence and patterns of head injuries in sports is not well documented beyond the annual reporting of the National Center for Catastrophic Sports Injury Research. Minimizing head injury in sports relies on existing standards for protective helmets, teaching of skills that minimize direct head impact even in contact sport, officiating rules that apply to the minimization of head injury mechanisms in the sport, and practically evaluating even the so-called minor concussion. The advantages of following the incidence and patterns of cerebral neuro-trauma of whatever nature, however, justifies the commitment that one would have to bring to such opportunities so that the effects of various preventive interventions can be tracked as well as the occurrences themselves.

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Contact sports have been participating in these events severe in nature. Although impact sports, such as occur in other sports baseball.^{2, 7, 10, 21} Although these potentially devastating and equipment changes the safety of organized studied athletic head producing these injuries caring for athletes with optimal outcome. Recent injuries have additive which is leading to a return to competition.

Team physicians, adequately evaluate if sustain athletic head injury is rendered unconscious to return to play, with subdural hematoma can an emergency.¹⁸ The physician should thoroughly assess the injury that may result from a

From the Department of Neurology (WLW); and Orl

CLINICS IN SPORTS MED

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Page 2 of 11

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Impact Dynamics of Football Helmets on Various Surfaces

Halsband, Kramer, Schneider, Drew et al - Safety in American Football
KRAMER

OBJECTIVES

The following report consists of data collected from two different testing environments as well as different testing procedures. The overall objective of the testing was to show the performance of a NOCSAE compliant football helmet in realistic impacts with both the playing surface and helmets worn by opposing players. Each of the following sections of this report will include two parts describing Helmet/Turf testing and Helmet/Helmet testing.

A. Helmet/Turf Testing

The primary objective of this testing was to demonstrate the performance of NOCSAE football helmets when tested on the field of play. This would include impacting on the actual playing surface at similar conditions to those experienced by players during similar game conditions. Testing included vintage helmets as well as those which were in new condition.

B. Helmet/Helmet Testing

The primary objective of this testing was to determine the performance of the NOCSAE football helmet when tested in helmet to helmet impacts. This testing was done on both the NOCSAE and ASTM test rigs, using other NOCSAE compliant helmets as the impacted surface in place of the standard impacting anvils. Standard NOCSAE and/or ASTM procedures were used in conjunction with the special test set up that was employed to achieve impact conditions.

All impacting was carried out at 12+MPH. This is the speed calculated from previous experiments using college football players. It is not our intention to represent that as a peak velocity.

TEST EQUIPMENT

A. Helmet/Turf Testing

Standard NOCSAE equipment was modified so as to make it portable and allow direct impacts to the turf. The system was rigidly affixed to a steel base plate, which served to emulate the NOCSAE based plate. This was needed for pre-test calibration only and was removed when testing of the helmet began.

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Page 3 of 11

B. Helmet/Helmet Testing

Standard NOCSAE equipment was used as set up and typically used in the laboratory environment. Pre test equipment checks showed it to be the proper type and installed in such a way so as to provide the conditions appropriate to the NOCSAE test. ASTM testing was performed on a standard monorail test rig. The ASTM test apparatus was in good repair and met all the requirements as set forth in ASTM Standards F-429 & F-717 respectively. In addition, the NOCSAE portion of this testing also included a second instrumented NOCSAE head model mounted to a Sierra Hybrid II Neck mounted to a 50 lb. cast aluminum torso. This headform was calibrated in the normal NOCSAE fashion. Still a third NOCSAE headform was used in this testing. It was not instrumented. In the ASTM portion of this test a second headform was also used. The DOT size "C" head model was used in the setup, in addition to the ISO size "J" headform as specified in the ASTM procedure.

TESTING ENVIRONMENT**A. Helmet/Turf Testing**

Testing was performed at "Husky Field". On arrival at the field conversations with the grounds keepers verified that field conditions were average. I was able to determine that the field was watered via automatic sprinkler between 10:20 PM and 10:40 PM for an 18-minute cycle the previous evening. This is the normal routine. The period of time from the last watering of the field prior to testing was approximately 16 hours. At least eight hours of this exposure was during the sunshine hours. The ground appeared dry to the eye and touch at the time of testing.

B. Helmet/Helmet Testing

Testing was performed in a laboratory where the temperature and humidity were 75°F and 50% respectively.

EQUIPMENT SET UP & CALIBRATION**A. Helmet/Turf Testing**

After arriving and setting up the "NOCSAE" system it was approximately 2:15 PM. The system was set up in the area of the 15 yard line and to the right of center on the field when looking at the north goal post. Proper cable tension and carriage alignment were verified. The electronics were checked via NOCSAE pulse through procedures, which resulted in the proper voltage/SI output. This demonstrated that the electronic systems were functioning properly. NOCSAE head form NB-2 size 7 1/4 was attached to the drop carriage. The head form was equipped with a triaxial accelerometer, serial number PCB-303m134 from PCB electronics in accordance with NOCSAE standards. Severity Index analyzer serial number 248

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Page 4 of 11

was connected to the accelerometer. With the base plate in place and the normal NOCSAE anvil and MEP installed, a series of calibration drops were made.

The following calibration data was obtained:

18" CALIBRATION DROPS ON MEP IN FRONT POSITION

DROP #	LOCATION	SI TARGET (+/-5%)	SI RESULTS
1-F	FRONT	737 (700-774)	735
2-F	FRONT	737 (700-774)	737
3-F	FRONT	737 (700-774)	736
1-S	SIDE	759 (721-796)	749
2-S	SIDE	759 (721-796)	744
3-S	SIDE	759 (721-796)	745
1-T	TOP	841 (799-883)	833
2-T	TOP	841 (799-883)	837
3-T	TOP	841 (799-883)	826

This calibration data shows that the system fell well within the Round Robin data of 1980, which is the NOCSAE calibration target. At the completion of the calibration the base plate was removed leaving a clear path to the turf below. This enabled the testing to be conducted on the natural surface of "Husky Field". This would be a very good approximation of the impact and a resulting SI that would be experienced in actual field play.

B. Helmet/Helmet Testing

NOCSAE

Proper cable tension and carriage alignment were verified. The electronics were checked via NOCSAE pulse through procedures, which resulted in the proper voltage/SI output. This demonstrated that the electronic systems were functioning properly. NOCSAE head form J8M-82 size 7 1/4 was attached to the drop carriage. The head form was equipped with a triaxial accelerometer from PCB electronics in accordance with NOCSAE standards. The Severity Index analyzer was connected to the accelerometer. With the normal NOCSAE anvil and MEP installed, a series of calibration drops were made.

The following NOCSAE calibration data was obtained:

18" CALIBRATION DROPS ON MEP IN FRONT POSITION

DROP #	LOCATION	SI TARGET (+/-5%)	SI RESULTS
1-F	FRONT	737 (700-774)	727
2-F	FRONT	737 (700-774)	743
3-F	FRONT	737 (700-774)	741
1-S	SIDE	759 (721-796)	753
2-S	SIDE	759 (721-796)	754
3-S	SIDE	759 (721-796)	768
1-T	TOP	841 (799-883)	847
2-T	TOP	841 (799-883)	840

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Page 5 of 11

3-T	TOP	841 (799-588)	846
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This calibration data shows that the system fell well within the Round Robin data of 1980, the NOCSAE calibration target. NOCSAE headform model M-33 was calibrated in the same manner prior to testing. The average of three drops in each of the calibration positions was calculated. The following data was recorded:

Front	734
Side	758
Top	839

This demonstrated that the second NOCSAE headform, accelerometer and SI analyzer to be used in this test was also within the Round Robin data as required.

ASTM

ASTM pre-test system check was performed in accordance with ASTM standards using a certified spherical impactor and MEP. ASTM system check showed all system components to be in specification. The impactor and MEP were supplied and certified by US Testing Inc.

System check results were as follows:

g's	Impact Velocity
393	5.44 meters/sec.
592	5.44 meters/sec.
393	5.48 meters/sec.

This demonstrated proper equipment function.

HELMET SELECTION

A. Helmet/Turf Testing

Testing was performed using five helmets. Helmet 1 was a Riddell PAC-3 size 7 1/4. The components dated as follows: Front Pad 6/80, Top Pads 3/78, Back Pad 8/84, "Neck" Pad 7/78, all pads size "A". Helmet 2 was a 12/80 Riddell Micro-Fit size 7 1/8 - 7 3/4, with a two point chin strap (all other helmets had a three point chin strap system). Helmet 3 was a Pro Air II size 7 1/8 - 7 3/4, serial number 691298. Helmet 4 was a Riddell M-155 7 1/4 - 7 3/4. Helmet 5 was a Riddell PAC-3 7 1/4 with vintage components similar to Helmet 1.

B. Helmet/Helmet Testing

Testing was performed using three helmets. A Silver PAC-3 size 7 1/4, components dated as follows: Shell 11/80, Front Pad 11/80, Top Pads 10/78, Back Pad 6/79, "Neck" Pad 2/82, all pads size "A". The PAC-3 had been tested previously. The other helmets consisted of a White WD-1 7 1/4 and Red Air

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Page 8 of 11

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Power 7 1/8 - 7 3/4. The WD-1 was a 1992 production helmet. The Air Power was pre 1984.

TEST DATA

A. Helmet/Turf Testing

At approximately 2:30 PM we dropped the calibrated head form from 18 inches onto the surface of "Husky Field".

18" PRE-TEST DROP ONTO TURF

DROP NO.	LOCATION	SI RESULTS
1-F	FRONT	146

This was the first indication that the ground was somewhat more compliant than the standard NOCSAE test anvil/MEP.

At 2:44 PM, with the shaded field temperature at 89 F, the temperature in the direct sunlight was variable from 88 - 108 F. We placed a Riddell PAC-3 size 7 1/4 (which we marked as Helmet 1) onto the MH-2 test head form. This particular helmet had all size "A" pads. The front pad was dated 8/80, top pad sat 3/78, upper back pad 8/84, "neck" pad 2/78. This helmet had been conditioned to a temperature of 98 F. It is believed this temperature would closely approximate the temperature of the helmets in use.

We then began a series of tests on the helmet.

HELMET 1 TEST 1-11 @ 60"

TEST NO.	LOCATION	SI RESULTS	COMMENTS
1	FRONT	546	
2	FRONT	734	SOME COMPRESSION OF SOIL
3	FR BOSS	497	
4	FR BOSS	645	
5	SIDE	434	2:55 PM
6	SIDE	505	
7	RR BOSS	645	
8	RR BOSS	670	
9	REAR	996	SOIL COMPRESSION SIGNIFICANT
10	REAR	1006	DEEP DENT IN SOIL 3:12 PM
11	REAR	694	NEW POSITION ON TURF 3:16 PM

Test 9 and 10 were conducted on soil, which had compressed to a considerable degree. Therefore, testing was conducted on a different position on the field. This was the first indication that the compression of the turf was a large factor in the testing. It was decided to test two of the remaining helmets once in each position.

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Page 7 of 11

This was done in an effort to minimize the number of large dents in the playing surface. Relocating the test rig after each impact was also considered but, this would have resulted in large variability in the impact surface. Testing each helmet in the same location kept the data relative. Helmet 1 was actually subjected to the most severe test conditions.

In the accompanying graphs, the first impacts of Helmet 1 were used as data points. In the case of the rear, the third test of that position (the first on "virgin" turf) was averaged with test 33. Test 33 was a similar vintage PAC-3 impacted in the rear.

Upon completion of test 11, a different helmet was similarly tested. Helmet 2 was a 12/69 Riddell Micro-Fit size 7 1/8 - 7 3/4, with two point chin strap; it was tested at ambient conditions. All other helmets had a three-point chinstrap system.

HELMET 2 TEST 12-16 @ 80"

TEST NO.	LOCATION	SI RESULTS	COMMENTS
12	FRONT	815	SAME TURF AS TEST 11 3:45 PM
13	FR BOSS	790	
14	SIDE	XXX	NO TRIGGER
14A	SIDE	480	3:48 PM
15	RR BOSS	528	
16	REAR	797	3:46 PM TEMP IN SHADE 83°F

Upon completion of test 16 a third helmet was similarly tested. Helmet 3 was a Pro Air 11 7 1/8 - 7 3/4, serial number 891298. Helmet temperature was 90 - 92 F. The exact age of this helmet can be determined from the serial number; it would be considered new.

HELMET 3 TEST 17-21 @ 80"

TEST NO.	LOCATION	SI RESULTS	COMMENTS
17	FRONT	609	NEW TURF FROM TEST 16 3:51 PM
18	FR BOSS	790614	
19	SIDE	XXX315	3:58 PM
19A	SIDE	480350	SECOND DROP TO SEE EFFECT OF SOIL COMPRESSION
20	RR BOSS	528519	4:00 PM
21	REAR	797650	

Upon completion of test 21 a fourth helmet was similarly tested. Helmet 4 was a Riddell M-155 7 1/4 - 7 3/4. Helmet temperature was 97 F. The exact age of this helmet can be determined from the mold clock; it would be considered new. This helmet was tested twice in each position to supply a base of data to compare to the first helmet tested.

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Page 8 of 11

HELMET 4 TEST 22-32 @ 80"

TEST NO.	LOCATION	SI RESULTS	COMMENTS
22	FRONT	618	4:10 PM
23	FRONT	657	
24	FR BOSS	486	
25	FR BOSS	588	4:21 PM
26	SIDE	XXX	NO TRIGGER
26A	SIDE	461	
27	SIDE	444	THIRD IMPACT
28	RR BOSS	555	SOIL COMPRESSION SIGNIFICANT
29	RR BOSS	611	4:30 PM
30	REAR	824	
31	REAR	792	
32	REAR	593	NEW TURF LOCATION

Upon completion of test 32 a fifth helmet was similarly tested. Helmet 5 was a Riddell PAC-3 7 1/4. Helmet temperature was 102 F at the neck and 95 F at the rear, dated 11/81. The vintage of this helmet's components was similar to Helmet 1. This helmet was tested once in the rear position to supply a base of data to compare to the first helmet tested. This result was used to average test scores for the rear position on the PAC-3 model helmets.

HELMET 5 TEST 33 @ 80"

TEST NO.	LOCATION	SI RESULTS	COMMENTS
33	REAR	788	SAME TURF LOCATION AS TEST 32

At the completion of this testing a new position on the turf was used to conduct bare head form drops from 48 inches. This was done in an effort to show the effect of soil compression on SI readings.

BARE HEAD FORM DROPS FROM 48"

TEST NO.	LOCATION	SI RESULTS	COMMENTS
34	REAR	682	
35	REAR	877	SIGN OF SOIL COMPRESSION
36	REAR	898	
37	REAR	962	
38	REAR	971	MORE PRONOUNCED SOIL COMP
39	REAR	1006	
40	REAR	1014	
41	REAR	1025	STOPPED TO LIMIT DENT DEPTH

B. Helmet/Helmet Testing

The test set-up allowed for testing the helmets in a helmet to helmet fashion. Some tests caused helmets to be impacted to helmets that were rigidly retained in a fixed

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Page 8 of 11

position, one series of impacts was carried out with the impacted helmet mounted on a Sierra Hybrid II neck. This allowed the impacted helmet to move in a "natural" way during and after impacting. In this series of tests the impacted helmet/headform was instrumented. All NOCSAE series impacts were conducted at the specified NOCSAE drop height of 90", approximately 12mph.

All helmets in the following tests were conditioned at 100°F for a minimum of 4 hours prior to testing. Each helmet was returned to the conditioning environment periodically throughout the test schedule to maintain temperature during testing.

NOCSAE series one, tested the PAC-3 helmet in motion impacting the Air Power helmet. The Air Power helmet was mounted on the un-instrumented NOCSAE headform. The helmets were aligned to cause impact of the upper left front area on the PAC-3 (marked with an "X") against the middle front of the Air Power. Care was taken to prevent any faceguard involvement in the initial impact.

Results series one:

Test Number	SI Results	g's	Drop Hgt.
1	156	44	60"
1a	178	49	60"

NOCSAE series two, tested the WD-1 helmet in motion impacting the Air Power helmet. The Air Power helmet was mounted on the un-instrumented NOCSAE headform. The helmets were aligned to cause impact of the upper left front area on the WD-1 (marked with an "X") against the middle front of the Air Power. Care was taken to prevent any faceguard involvement in the initial impact.

Results series two:

Test Number	SI Results	g's	Drop Hgt.
2	163	48	60"
2a	162	49	60"

NOCSAE series three, tested the PAC-3 helmet mounted on the instrumented NOCSAE headform, mounted on the Sierra Hybrid II neck, mounted to a 501b. cast torso. The PAC-3 was impacted in the area of the upper left front (marked with an "X"). The Air Power helmet was mounted on the instrumented NOCSAE headform on the drop rig and was positioned so as to strike the PAC-3 with the middle front. Care was taken to prevent any faceguard involvement in the initial impact.

Results series three:

Test Number	SI Results	g's	Drop Hgt.
1 Air Power (analyzer=a)	77	44	60"
1 PAC-3	75	45	60"

NCTE: The similarity in g results indicated the impact was "CG-CG".

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Page 10 of 11

ASTM series one tested the PAC-3 helmet in motion, fitted to an instrumented headform (ISO "J"), impacting the Air Power helmet. The Air Power helmet was mounted on the un-instrumented "DOT" headform. The helmets were aligned to cause impact of the upper left front area on the PAC-3 (marked with an "X") against the middle front of the Air Power. Care was taken to prevent any faceguard involvement in the initial impact.

Results series one (ASTM):

Test Number	SI Results	\bar{x}	Velocity (m/s)
1 (12:47)	189	51.3	5.53
1a (12:50)	217.5	63.4	5.54

ASTM series two tested the WD-1 helmet in motion, fitted to an instrumented headform (ISO "J"), impacting the Air Power helmet. The Air Power helmet was mounted on the un-instrumented "DOT" headform. The helmets were aligned to cause impact of the upper left front area on the WD-1 (marked with an "X") against the middle front of the Air Power. Care was taken to prevent any faceguard involvement in the initial impact.

Results series two (ASTM):

Test Number	SI Results	\bar{x}	Velocity (m/s)
2 (13:08)	209.1	61.9	5.55
2a (13:11)	215.1	64.3	5.57

CONCLUSIONS

A. Helmet/Turf Testing

The testing showed that the soil is more compliant than the standard NOCSAE anvil. This indicates that the NOCSAE test is conservative when compared with this field of play in the locations impacted. Previous testing has shown that an opposing player's helmet is also more compliant than the NOCSAE anvil. The results also showed that all helmets tested performed well below the NOCSAE limit of 1500. It also demonstrated very little difference between models, manufacturers, or age of helmets tested.

Although each series of helmet impacts were subject to the variables of changing soil compression and different soil conditions for each location, the results are close enough to give a very high confidence level that any helmet meeting the NOCSAE standard in laboratory conditions would perform at levels well below the 1500 maximum when impacting a playing surface similar to the one tested.

B. Helmet/Helmet Testing

This testing has shown that major brands/models of football helmets perform remarkably similar in the locations and conditions tested. Helmets of various design and age have little effect on the outcome.

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Page 11 of 11

This series of testing demonstrated that when helmets collide with other helmets the energy attenuating effect of the helmets are combined so as to further reduce the forces transmitted to the wearer's head. In one series of impacts, when both helmeted headforms were instrumented, the resulting g's were 44 and 45 respectively. This indicated that when impacts occur "CG to CG" the risk of injury to each player is similar.

This testing was carried out at velocities similar to or somewhat higher than those typically experienced by high school football players. Resulting accelerations, even at these higher velocities, were significantly lower in all tests than those thought to cause serious injury, and were well below the pass/fail criteria of established standards.

EXHIBIT "C"

EXHIBIT "C"

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
BROWNSVILLE DIVISION

RAQUEL O. RODRIGUEZ
AND JOSE L. RODRIGUEZ

vs.

RIDDELL SPORTS, INC.,
RIDDELL, INC.,
ALL AMERICAN SPORTS
CORPORATION
d/b/a RIDDELL/ALL AMERICAN;
CHRIS HOODMAN; MONARCH
RUBBER COMPANY;
AND RUBATEX CORPORATION

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CAUSE NO. B-96-177

SWORN AFFIDAVIT OF PETER DAVID HALSTEAD

BEFORE ME the undersigned Notary Public on this day appeared the person known to me to be Peter David Halstead, who first after having been duly sworn and placed on his oath deposed and stated as follows:

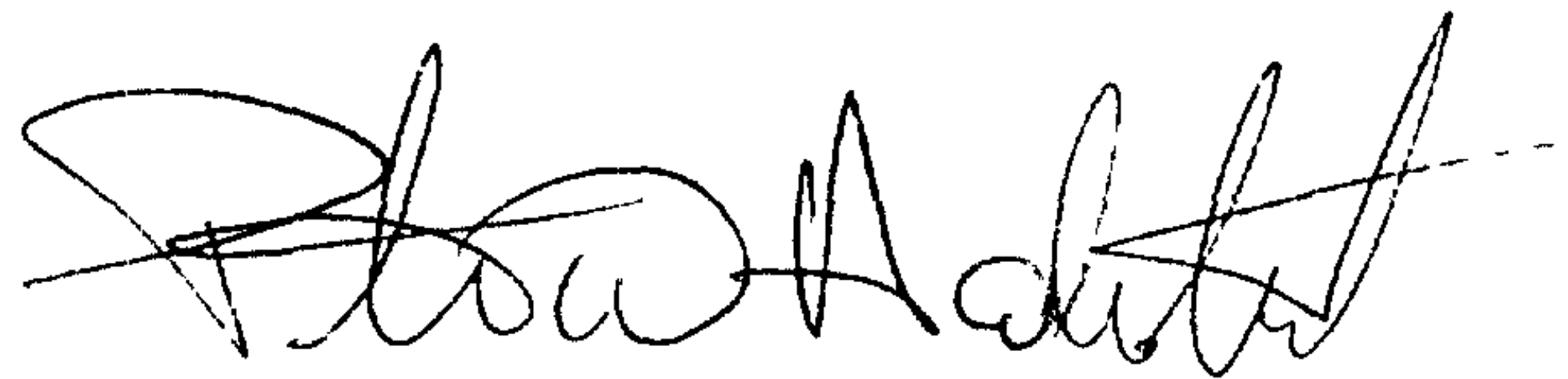
1. My name is Peter David Halstead. I am over twenty-one years of age, competent to make this Sworn Affidavit. I have never been convicted of a felony or an offense involving moral turpitude. I have personal knowledge of the matters contained in this Sworn Affidavit and the facts recited herein are true and correct.
2. I am the Technical Advisor to NOCSAE. I testified as an expert witness in the case of Jose Rodriguez vs.

Riddell, Inc., Civil Action No. B-CV-96-177,
Brownsville, Texas on March 11 and March 12, 1999.

3. I am attending a meeting at the Washington Secondary School Athletic Administrators Assn., in Spokane, Washington April 21-25, 2001; on April 27-29, 2001 I am participating in cadaver testing at the University of Tennessee involving University of Louisville School of Medicine, University of Tennessee and Bellarmine College; I am scheduled to be in Salt Lake City, Utah on a separate legal matter May 1 and 2, 2001; I have a meeting May 3 and 4, 2001 with Hillerich & Bradbury, Inc. to discuss a new product, May 6 and 7, 2001 I am Chairman of the Hockey Equipment Certification Meeting in Phoenix Arizona, May 7 and 8, 2001 I am an official United States Representative to the ISO Hockey Meeting, Phoenix Arizona and I am the Chairman of the ASTM meeting May 8 -12, 2001 in Phoenix, Arizona and every spare moment before these meetings I am preparing for the meetings. I have scheduled a vacation May 20-26, 2001. Not only am I not available to come to Brownsville to testify, I do not have sufficient time to review the voluminous documents and depositions in this complex products liability lawsuit and prepare for

and travel to Brownsville to testify.

4. I am available and willing to come to Brownsville to testify anytime after June 4, 2001 with adequate notice so that I may review all the documents and depositions and prepare to testify.



Peter David Halstead

Sworn to and subscribed to before me on this 19 day of April, 2001.



Notary Public in and for
The State of Tennessee

My Commission Expires: 01-03-05

EXHIBIT "D"

EXHIBIT "D"

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
BROWNSVILLE DIVISION

RAQUEL O. RODRIGUEZ
AND JOSE L. RODRIGUEZ

vs.

CAUSE NO. B-96-177

RIDDELL SPORTS, INC.,
RIDDELL, INC.,
ALL AMERICAN SPORTS
CORPORATION
d/b/a RIDDELL/ALL AMERICAN;
CHRIS HOODMAN; MONARCH
RUBBER COMPANY;
AND RUBATEX CORPORATION

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SWORN AFFIDAVIT OF DR. THOMAS A. GENNARELLI

BEFORE ME the undersigned Notary Public on this day appeared the person known to me to be Dr. Thomas A. Gennarelli, who first after having been duly sworn and placed on her oath deposed and stated as follows:

1. My name is Dr. Thomas A. Gennarelli. I am over twenty-one years of age, competent to make this Sworn Affidavit. I have never been convicted of a felony or an offense involving moral turpitude. I have personal knowledge of the matters contained in this Sworn Affidavit and the facts recited herein are true and correct.
2. I am a neurosurgeon. I testified as an expert witness in the case of Jose Rodriguez vs. Riddell, Inc., Civil Action No. B-CV-96-177, Brownsville, Texas on March 15, 1999.
3. I am lecturing out of the country in Moscow, Russia from May 10, 2001 until May 17, 2001 then I travel to Athens, Greece on May 17, 2001 until May 21, 2001, and I am in Cleveland, Ohio May 21, 2001 through May 22, 2001. I am on call for my neurosurgery practice May 1, 2001 through